

“Correlation of Wissler Human Thermal Model Blood Flow and Shiver Algorithms” by Grant Bue, Janice Makinen, and Thomas Cognata.

The Wissler Human Thermal Model (WHTM) is a thermal math model of the human body that has been widely used to predict the human thermoregulatory response to a variety of cold and hot environments. The model has been shown to predict core temperature and skin temperatures higher and lower, respectively, than in tests of subjects in crew escape suit working in a controlled hot environments. Conversely the model predicts core temperature and skin temperatures lower and higher, respectively, than in tests of lightly clad subjects immersed in cold water conditions. The blood flow algorithms of the model has been investigated to allow for more and less flow, respectively, for the cold and hot case. These changes in the model have yielded better correlation of skin and core temperatures in the cold and hot cases. The algorithm for onset of shiver did not need to be modified to achieve good agreement in cold immersion simulations.